

**REMARKS****INTRODUCTION:**

In accordance with the foregoing, claims 2, 3 and 24 have been cancelled, and claims 1, 4, 5, 12, and 23 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1 and 4-23 are pending and under consideration. Reconsideration is respectfully requested.

**OBJECTIONS TO CLAIMS:**

Claims 1 and 23 were objected to because of informalities. The typographical errors pointed out by the Examiner have been corrected. Thus, claims 1 and 23 are now submitted to be in allowable form.

**REJECTION UNDER 35 U.S.C. §112:**

In the Office Action, at page 3, numbered paragraph 4, claims 5-10 and 12-17 were rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth therein. This rejection is traversed and reconsideration is requested.

It is respectfully submitted that the ordinary chemical definition of “ppm” is utilized. Sources of common chemical information include Material Safety Data Sheets (MSDSs). An MSDS is designed to provide both workers and emergency personnel with the proper procedures for handling or working with a particular substance. MSDS's include information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill/leak procedures. These are of particular use if a spill or other accident occurs.

For example, in the MSDS HyperGlossary of Concentration Units, located at <http://ilpi.com/msds/ref/concentration.html>, a copy of which is enclosed for the convenience of the Examiner, “ppm” is defined as follows:

**“Parts per million (PPM).** Parts per million works like percent by mass, but is more convenient when there is only a small amount of solute present. PPM is defined as the mass of the component in solution divided by the total mass of the solution multiplied by 10<sup>6</sup> (one million):

$$\text{parts per million} = \left( \frac{\text{Mass of component}}{\text{Mass of solution}} \right) (1,000,000)$$

A solution with a concentration of 1 ppm has 1 gram of substance for every million grams of solution. Because the density of water is 1 g per mL and we are adding such a tiny amount of solute, the density of a solution at such a low concentration is approximately 1 g per mL. Therefore, in general, one ppm implies one milligram of solute per liter of solution.

Finally, recognize that one percent = 10,000 ppm. Therefore, something that has a concentration of 300 ppm could also be said to have a concentration of  $(300 \text{ ppm}) / (10,000 \text{ ppm/percent}) = 0.03\% \text{ percent by mass.}$

Thus, the concentrations in ppm of claims 5-6 and 12-13 refer to the mass of the component in solution divided by the total mass of the solution and then multiplied by  $10^6$ , as is known to those skilled in the art, and are submitted not to be vague or indefinite under 35 U.S.C. §112, second paragraph.

#### **REJECTION UNDER 35 U.S.C. §102:**

A. In the Office Action, at page 4, numbered paragraph 6, claims 1-2 and 19-24 were rejected under 35 U.S.C. §102(b) as being anticipated by Yamaguchi et al. (USPN 5,753,322). This rejection is traversed and reconsideration is requested.

Claim 1 has been amended to incorporate the features of claims 2 and 3. Claims 2, 3 and 24 have been cancelled without prejudice or disclaimer.

It is respectfully submitted that Yamaguchi et al. teaches that an aluminum building material comprises a substrate made of aluminum or an aluminum alloy, an anodic **oxide film having micropores formed on a surface** of said substrate, **and a film containing a photocatalytically active semiconductor and deposited on said anodic oxide film**, in contrast to the present invention, which recites, in amended claim 1: a method of providing antibacterial activity to a surface of a body using nano-sized metal particles, comprising: coating a volatile solution dispersed with nano-sized metal particles onto the surface of the body; and thermally treating the coated body wherein the nano-sized metal particles are deposited onto the body}, wherein the thermal treatment operation is performed at 150°C to prevent deformation of the body. Yamaguchi et al. teaches three total layers- a body (aluminum), an oxide film, and a photocatalytically active semiconductor. In contrast, the present invention recites two layers (see independent claim 1): a body and nano-sized metal particles deposited thereon.

Thus, it is respectfully submitted that independent claim 1 is not anticipated under

35 U.S.C. §102(b) by Yamaguchi et al. (USPN 5,753,322). Claim 2 has been cancelled without prejudice or disclaimer. Since claims 19-23 depend, directly or indirectly, from amended claim 1, claims 19-23 are submitted not to be anticipated under 35 U.S.C. §102(b) by Yamaguchi et al. (USPN 5,753,322) for at least the reasons that claim 1 is submitted not to be anticipated under 35 U.S.C. §102(b) by Yamaguchi et al. (USPN 5,753,322).

**B.** In the Office Action, at paged 4-5, numbered paragraph 7, claims 1-2, 19-22 and 24 were rejected under 35 U.S.C. §102(b) as being anticipated by Nishida et al. (USPN 55,597,673). This rejection is traversed and reconsideration is requested.

Nishida et al. (see claim 1 and abstract) teaches a composition having fine metallic particles-containing **fibers** with various **fine metallic particles therein**, which **have fiber properties** to such degree that they **can be processed and worked**, and which can exhibit various functions of the fine metallic particles, as well as a method for producing the same.

Claim 1 has been amended to incorporate the features of claims 2 and 3. Claims 2, 3 and 24 have been cancelled without prejudice or disclaimer.

It is respectfully submitted that Nishida et al. teaches a fiber composition having fiber characteristics, wherein the fibers have fine metallic particles embedded therein, but does not teach or suggest a method of providing antibacterial activity to a surface of a body using nano-sized metal particles, comprising: coating a volatile solution dispersed with nano-sized metal particles onto the surface of the body; drying the coated body; and thermally treating the coated body wherein the nano-sized metal particles are deposited onto the body, wherein the thermal treatment operation is performed at 50-150°C to prevent deformation of the body, as is recited in amended independent claim 1 of the present invention. That is the behavior of a coated body is different from the behavior of a fibrous grouping with embedded metal particles. Hence, Nishida et al.'s invention is different from the present claimed invention.

Thus, it is respectfully submitted that independent claim 1 is not anticipated under 35 U.S.C. §102(b) by Nishida et al. (USPN 5,897,673). Claim 2 has been cancelled without prejudice or disclaimer. Since claims 19-22 depend, directly or indirectly, from amended independent claim 1, claims 19-22 are submitted not to be anticipated under 35 U.S.C. §102(b) by Nishida et al. (USPN 5,897,673) for at least the reasons that amended claim 1 is submitted not to be anticipated under 35 U.S.C. §102(b) by Nishida et al. (USPN 5,897,673).

#### **REJECTION UNDER 35 U.S.C. §103:**

**A.** In the Office Action, at pages 5-6, numbered paragraph 9, claims 3-9 and 12-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi et al. The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

As noted above, the structure of Yamaguchi et al. is different from the structure of the material formed using the method of the present invention, i.e., **Yamaguchi et al.** teaches a **three-layered** structure, while the **present claimed invention** (see amended independent claim 1) recites a **two-layered** material.

Thus, it is respectfully submitted that amended independent claim 1 is patentable under 35 U.S.C. §103(a) over Yamaguchi et al. Claim 3 has been cancelled without prejudice or disclaimer. Since claims 4-9 and 12-16 depend from amended claim 1, claims 4-9 and 12-16 are submitted to be patentable under 35 U.S.C. §103(a) over Yamaguchi et al. for at least the reasons that amended claim 1 is patentable under 35 U.S.C. §103(a) over Yamaguchi et al.

**B.** In the Office Action, at pages 6-7, numbered paragraph 10, claims 3-8, 10, 12-15 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nishida et al. The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

As noted above, the fibrous material of Nishida et al., wherein the fibrous material is embedded with fine metallic particles, will behave differently from the body coated with nano-sized metallic particles as recited by the present claimed invention. Especially preferred for the fibers of Nishida et al. are fibers having pore sizes of 1.0  $\mu\text{m}$  or less (see col. 7, lines 8-11), and the pores may be connected with one another and have openings on the surfaces of the fibers (claim 3). In contrast, the surface of the present claimed invention is non-fibrous. Hence, it is respectfully submitted that Nishida et al. does not teach or suggest the present claimed invention of amended claim 1.

Thus, amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Nishida et al. Since claims 4-8, 10, 12-15 and 17 depend from amended claim 1, claims 4-8, 10, 12-15 and 17 are submitted to be patentable under 35 U.S.C. §103(a) over Nishida et al. for at least the reasons that amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Nishida et al.

## **CONCLUSION:**

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview

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to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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